

**Case 3544*****Apis armbrusteri* Zeuner, 1931 (Insecta, Hymenoptera): proposed conservation by designation of a neotype**

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**Abstract.** The purpose of this application, under Article 75.5 of the Code, is to conserve the name *Apis armbrusteri* Zeuner, 1931 for a species of fossil honey bee occurring in the Miocene fauna of southwestern Germany. The holotype is the hollow impression of a bee from the Early Miocene Böttingen Marmor and, aside from attributing the taxon to the tribe APINI, no details regarding its specific identity can be gleaned from this specimen. Nonetheless, this name has been universally applied to the Early Miocene honey bees from Böttingen Marmor and the related contemporaneous site from the same crater series, Randeck Maar, since Zeuner & Manning (1976). Although *A. armbrusteri* is recognised as a nomen dubium, to resurrect the unused specific epithet *Apis scheuthlei* (Armbruster, 1938) for these bees would be counter to current usage and would destabilise a voluminous literature on honey bee evolution and ecology. It would also threaten the subgeneric name *Cascapis* Engel, 1999 as *A. armbrusteri* sensu Zeuner & Manning (1976), i.e. based on the Randeck Maar material, is its type species by original designation. Accordingly, it is proposed that the unidentifiable holotype be set aside and one of the more exquisitely preserved and easily diagnosable specimens from this same fauna be designated as neotype, thereby stabilising the honey bee taxonomy and bringing the application of the name *A. armbrusteri* in line with universal current usage.

**Keywords.** Nomenclature; taxonomy; Hymenoptera; APIDAE; *Apis*; *Apis armbrusteri*; *Cascapis*; *Hauffapis*; apiculture; fossil honey bees; Miocene.

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1. Zeuner (1931, p. 292) proposed the name *Apis armbrusteri* for a new fossil honey bee species based on the hollow remains of several workers on a thermal limestone

slab from the Early Miocene of Böttingen Marmor (Swabian Alb, Württemberg, southwestern Germany). The casts do not preserve any species-specific details of honey bees. Zeuner (p. 297) designated the third cast on the block as the holotype.

2. Armbruster (1938, p. 37) described a new genus, *Hauffapis* with three included species, *Hauffapis scheuthlei*, *H. scheeri* and *H. scharmanni* (pp. 43–44), for a group of exceptionally well preserved early honey bees from the Early Miocene of Randeck Maar (Swabian Alb, Württemberg, southwestern Germany), a deposit that is part of the same crater series as that of Böttingen Marmor but of considerably different taphonomy and preservation. The genus-group name *Hauffapis* is unavailable as no type species was originally (or has subsequently been) selected (Article 13.3 of the Code; Michener, 1990, 1997; Engel, 1999).

3. Zeuner & Manning (1976, pp. 244–248), in a monographic study of the fossil bees of the world published posthumously from accumulated notes, considered *Apis armbrusteri* and the three ‘*Hauffapis*’ species to be conspecific and united them all under the former name, retaining Armbruster’s epithets as subspecific entities for minor variations in wing venation.

4. Engel (1999, p. 187), in a taxonomic overview of living and fossil honey bees, proposed the subgeneric name *Cascapis*, to use in place of *Hauffapis* Armbruster, 1938, describing the subgenus on the basis of the well preserved Randeck Maar honey bees, then all considered as *Apis armbrusteri* Zeuner, 1931, following Zeuner & Manning (1976). *Apis armbrusteri* Zeuner, 1931 is the type species of *Cascapis* by original designation.

5. Since Zeuner & Manning’s (1976) monograph, the name *Apis armbrusteri* Zeuner, 1931 has been universally employed as the name for the Miocene species of honey bee from the Böttingen Marmor-Randeck Maar fauna. Indeed, it had already been the standard usage for many years prior to their monograph. The name has appeared in countless works on honey bee systematics and evolution, and in the voluminous apicultural literature (e.g. Statz, 1934, 1944; Roussy, 1937; Kelner-Pillault, 1969a, 1969b; Burnham, 1978; Culliney, 1983; Seeley, 1985; Ruttner 1988, 1992; Ruttner et al., 1986; Zhang, 1990; Michener, 1990, 1997, 2007; Hong & Miao, 1992; Petrov, 1992; Lutz, 1993; Engel, 1998, 1999, 2000, 2001, 2002, 2006; Engel et al., 2009; Kotthoff, 2005; Oldroyd & Wongsiri, 2006; Tan et al., 2008).

6. In addition, the genus-group name *Cascapis* Engel, 1999 would also be threatened as *A. armbrusteri* Zeuner, 1931 is its type species by original designation, although the diagnosis is based on the more completely preserved Randeck Maar material under the synonymic names, *H. scheuthlei*, *H. scheeri* and *H. scharmanni*.

7. The incompleteness of the holotype leaves the identity of *Apis armbrusteri* entirely ambiguous, even at the generic level. Reverting to one of Armbruster’s (1938) long unused epithets would be counter to nomenclatural stability and universal usage. Presently involved in a review of the Miocene diversity of honey bees, we propose the stabilisation of *Apis armbrusteri* Zeuner by replacement of the unidentifiable name-bearing type by a neotype in accordance with Article 75.5. We therefore propose that an exceptionally well preserved specimen from Randeck Maar (Staatliches Museum für Naturkunde, SMNS 64675, Fig. 1) should be designated as neotype.

8. The International Commission on Zoological Nomenclature is accordingly asked:



**Fig. 1.** Proposed neotype of *Apis armbrusteri* Zeuner, 1931 (Staatliches Museum für Naturkunde, SMNS 64675). Scale bar = 2 mm.

- (1) to use its plenary power to set aside all previous type fixations for the nominal species *Apis armbrusteri* Zeuner, 1931 and to designate as neotype a specimen from the same geological horizon at Randeck Maar (SMNS 64675 in the Staatliches Museum für Naturkunde, Stuttgart);
- (2) to place on the Official List of Generic Names in Zoology the name *Cascapis* Engel, 1999 (gender: feminine), type species by original designation *Apis armbrusteri* Zeuner, 1931;
- (3) to place on the Official List of Specific Names in Zoology the name *armbrusteri* Zeuner, 1931, as published in the binomen *Apis armbrusteri* and as defined by the neotype designated in (1) above (specific name of the type species of *Cascapis* Engel, 1999).

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